

Curtain coater and method for curtain coating

5 The present invention relates to curtain coater according to the preamble of claim 1 and to curtain-coating method according to the preamble of claim 10.

10 In a curtain coater, the coating mix is applied to the surface of a moving web of paper or board, generally from a nozzle extending over the full cross-machine width of the web and located above the web being coated, whereby the coating mix can fall onto the web surface as curtain-like shower. Curtain coating is categorized as a noncontacting coating method, wherein the applicator
15 itself makes no contact with the web being coated, but instead, the coating mix is applied to the web surface in the form of a free-falling curtain of coating mix. The technique of curtain coating is described, e.g., in publication DE 196 22 080.

20 During its travel, a moving web gathers a thin boundary layer of air that moves along with the web. In curtain coaters, the momentum of the coating mix applied to the web surface is small as compared to the momentum of the coating mix amount directed from a jet applicator, for
25 instance, which means that the boundary air layer traveling on the web surface can easily scatter the curtain of coating mix flowing from the nozzle of a curtain coater thus making the applied coating layer uneven. With higher
30 web speeds in the coater station, the problem is accentuated due to the faster speed of the boundary air layer and its higher momentum. Hence, the control of the

the web to the application zone. In one embodiment of the invention, the amount of the boundary air coming to the application zone is reduced by means of a suction nozzle cooperating with the air-doctoring element, whereby the
5 boundary air layer is removed via the suction nozzle by a vacuum. Additionally, the adherence of the coating mix curtain to the web surface can be augmented by means of a gas-injection nozzle mounted downstream after the applicator nozzle in the travel direction of the web, whereby
10 a gas jet can be directed from the gas-injection nozzle toward the coating mix curtain. Hereby, the combined momentum of the coating mix curtain and the gas jet becomes sufficiently energetic to force the coating mix to penetrate through the boundary air layer traveling on
15 the web surface.

More specifically, the curtain coaters according to the invention are characterized by what is stated in the characterizing part of claims 1.

20 Furthermore, the curtain-coating method according to the invention is characterized by what is stated in the characterizing part of claims 10.

25 The invention offers significant benefits.

In a curtain coater according to the invention, the amount of boundary air traveling on the web being coated to the application zone can be reduced significantly as
30 compared with conventional curtain coaters, whereby the coat quality and web runnability in the coater are improved. The web speed in a curtain coater according to